

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1. (currently amended) Inspection machine for printed matter in the form of printed sheets, ~~such as securities, notes, banknotes, passports and other similar document, with comprising:~~

a sheet feeder,

~~wherein the machine comprises at least~~ a first sheet inspection unit with ~~[[an]]~~ a first inspection cylinder for transporting a printed sheet during inspection, ~~[[an]]~~ a first illumination means and a first camera connected to an analysing device for taking an image of the printed sheet while it is transported on ~~[[said]]~~ the first inspection cylinder,

a second sheet inspection unit with a second inspection cylinder for transporting a printed sheet during inspection, a second illumination means and a second camera connected to the analysing device for taking an image of the printed sheet while it is transported on the second inspection cylinder,

a third sheet inspection unit with a third inspection cylinder for transporting a printed sheet during inspection, a third illumination means and a third camera connected to an analysing device for taking an image of the printed sheet while it is transported on the third inspection cylinder,

an input transfer cylinder to successively bring the printed sheets to the ~~at least one first~~ inspection unit, and

an output transfer cylinder to take away the printed sheets from the ~~at least one first~~ inspection unit,

wherein the input transfer cylinder, the first, second and third inspection cylinders and the output transfer cylinder are disposed one after the other in direct contact so that a printed sheet is transferred directly and successively from the input transfer cylinder to the first

inspection cylinder, to the second inspection cylinder, to the third inspection cylinder, and to the output transfer cylinder,

and wherein said at least one the first, second and third inspection ~~[[unit]]~~ units and the input and output transfer cylinders are arranged in such a manner that the printed sheet is transferred directly from one transfer or inspection cylinder to another and that the inspected printed sheet is taken away from said the first, second or third inspection cylinder only once the inspection of the sheet is completed by ~~said at least one~~ the first, second or third inspection unit.

2. (cancelled)

3. (currently amended) A machine as claimed in claim 1, wherein ~~said~~ the first inspection cylinder is a transparent cylinder, said the first illuminating means are placed inside said the transparent cylinder and said the first camera is placed outside said the transparent cylinder for inspecting a printed sheet in transparency.

4. (currently amended) A machine as claimed in claim 1, ~~further comprising a wherein~~ the second sheet inspection unit including a second inspection cylinder for transporting a printed sheet during inspection with a second illumination means for illuminating said printed sheet and a second camera for inspecting inspects a first illuminated side of the printed sheet.

5. (cancelled)

6. (currently amended) A machine as claimed in claim ~~[[4]]~~ 1, ~~further comprising a wherein the~~ third sheet inspection unit including a third inspection cylinder for transporting a printed sheet during inspection with a third illumination means for illuminating said printed sheet and a third camera for inspecting inspects a second illuminated side of the printed sheet.

7. (cancelled)

8. (currently amended) A machine as claimed in claim [[6]] 1, wherein ~~[[said]] the~~ second inspection unit and ~~[[said]] the~~ third inspection unit each further include at least one non-visible feature inspection unit.

9. (currently amended) A machine as claimed in claim 8, wherein ~~[[said]] the~~ non-visible feature inspection unit ~~include~~ includes means for detecting IR, UV or magnetic properties on the printed sheets.

10. (currently amended) A machine as claimed in claim 1, wherein the first, second and third inspection cylinder ~~is~~ cylinders are carrying only one set of grippers each, and the diameter of the first, second and third inspection cylinder ~~cylinders~~ is minimized for minimal transport and inspection time.

11. (currently amended) A machine as claimed in claim 1, wherein the input transfer cylinder, the first second and third ~~[[and]]~~ inspection cylinders, and the output transfer cylinder are arranged in a zigzag manner such that a transport length of a printed sheet on each of the first, second and third inspection cylinder ~~cylinders~~, between an input location where a printed sheet is transferred onto the first, second or third inspection cylinder and an output location where the printed sheet is transferred away from the first, second or third inspection cylinder is optimised for a given sheet length.

12. (currently amended) A machine as claimed in claim 11, wherein the transport length of the printed sheet on the first, second or third inspection cylinder is slightly greater than the length of the printed sheet to be inspected.

13. (previously presented) A machine as claimed in claim 1, further comprising a marking unit placed downstream of the output transfer cylinder for marking defective sheets.

14. (currently amended) A machine as claimed in claim 1, wherein each of the first, second and third cameras ~~camera~~ is a linear camera that takes successive linear images of the

printed sheet being inspected and which is synchronized with the sheet transport on the associated first, second or third inspection cylinder.

15. (currently amended) A machine as claimed in claim 14, wherein each of the first, second and third inspection cylinder comprises an encoder for synchronizing operation of the associated linear camera.

16. (currently amended) An inspection process for printed matter in the form of printed sheets, ~~such as securities, notes, banknotes, passports and other similar document~~, wherein the process comprises the following steps:

successive printed sheets to be inspected are transferred from a feeder ~~into~~ to a first inspection unit in which a first inspection by transparency is carried out, the printed sheets being transported in ~~said~~ the first inspection unit by a first inspection cylinder;

once the first inspection is terminated, the printed sheets are transferred to a second inspection unit in which a second inspection of a first side of the printed sheets is carried out, the printed sheets being transported in ~~said~~ the second inspection unit by a second inspection cylinder;

once the second inspection is terminated, the printed sheets are transferred to a third inspection unit in which a third inspection of a second side of the printed sheets is carried out, the printed sheets being transported in ~~said~~ the third inspection unit by a third inspection cylinder;

once the third inspection is terminated, the printed sheets are transferred ~~[[in]]~~ to a marking unit and are marked as defective if the result of one of the first, second and third inspections ~~inspection~~ shows a defect; and

once marking has been performed, the printed sheets are transported in a delivery unit and sorted in delivery piles depending on whether or not the printed sheet are marked as being defective,

wherein transfer of the printed sheets from the first inspection unit to the second inspection unit, and from the second inspection unit to the third inspection unit, is made directly

from said the first inspection cylinder to said the second inspection cylinder, respectively from said the second inspection cylinder to said the third inspection cylinder.

17. (currently amended) An inspection process according to claim 16, wherein said the second ~~[[and/]]~~or third inspection includes inspection of visible ~~and/or invisible~~ features on the printed sheets.

18. (currently amended) An inspection process as claimed in claim 16, wherein the diameter of the first, second and third inspection cylinders is minimized for minimal transport and inspection time.

19. (previously presented) An inspection process as claimed in claim 16, comprising the step of arranging the first, second and third inspection cylinders in such a manner that a transport length of a printed sheet on each inspection cylinder, between an input location where a printed sheet is transferred onto the inspection cylinder and an output location where the printed sheet is transferred away from the inspection cylinder is optimised for a given sheet length.

20. (currently amended) An inspection process as claimed in claim 19, wherein the transport length of the printed sheet on each of the first, second and third inspection ~~cylinder~~ cylinders is selected to be slightly greater than the length of the printed sheet to be inspected.

21. (currently amended) An inspection process as claimed in claim 16, wherein said the first, second and third inspections include synchronizing operation of a linear camera that takes successive linear images of the printed sheet being inspected with the sheet transport on the associated first, second and third inspection cylinder.

22. (new) An inspection process according to claim 16, wherein the second or third inspection includes inspection of invisible features on the printed sheets.